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ABSTRACT

Sources and selection criteria for maps and charts published by the United States government are outlined in this manual. Since there is still no comprehensive index to U.S. government published maps, several selections tools are recommended. A section is included concerning the map and chart programs of each of the issuing departments, agencies, bureaus and services. The type of map produced by each agency is described, and the correct address for mail orders is given. An alternative map source for academic and public libraries, the map depository program of the Defense Mapping Agency Topographic Center, is also described. (Author/PF)

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THE ACQUISITION OF MAPS AND CHARTS PUBLISHED BY THE UNITED STATES GOVERNMENT

A PROFESSIONAL PAPER

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR

THE DEGREE OF MASTER OF LIBRARY SCIENCE

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

SCHOOL OF

LIBRARY SCIENCE

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DENTON, TEXAS

MAY, 1975

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PREFACE

This professional paper is being submitted to fulfill partial requirements for a Master of Library Science degree. The impetus for this paper originated from an oral report in "The Special Library," Library Science 5323, given in the Spring of 1974.

As indicated in the title, this paper treats only maps and charts published by the United States government. Charts shall be included, but only in relation to those defined within the text. This excludes any type of mathematical charts. Atlases and globes shall not be presented within the context of this paper.

The purpose of this manual is to discuss the acquisition of the various types of maps and charts published by the United States government and their availability. A section is included concerning the program of each of the issuing departments, agencies, bureaus or services.

This manual should prove to be of value to the professional, or the layman, who merely desires a map of his locale for a hiking trip and knows neither what is available, nor where to obtain it.

CHAPTER I

INTRODUCTION

Who needs maps and charts? What are the sources for maps? How are they selected and evaluated? Where may they be obtained? These are all questions which shall be answered in relation to the maps and charts published by the United States government within the context of this paper.

The usage and importance of maps are not limited to geography course studies alone, as are exemplified by the following:

> Maps are usually regarded primarily as a place media but their scope is not limited to showing geographic locations. By employing combinations of diverse symbols they also visualize many other important topics such as ethnic relationships, physical, social and economic conditions, and artistic and literary development.[1]

All subject areas employ the use of maps. "Unlike many other reference sources, the map is a form which crosses all disciplines, all subject areas."[2]

Before delving into the responses to the previous questions and various subject areas, it is necessary to

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[1]Warren B. Hicks and Alma M. Tillin, Developing Multi-Media Libraries (New York: R. R. Bowker Co., 1970), p. 25.

[2]William Katz, Introduction to Reference Work (New York: McGraw-Hill, 1969), p. 285.

define the terms, map and chart, as they will be discussed in the text. According to Webster's Third New International Dictionary, a map is:

> a drawing or other representation that is usually made on a flat surface and that shows the whole or a part of an area (as of the surface of the earth or some other planet or of the moon) and indicates the nature and relative position and size according to a chosen scale or projection of selected features or details (as countries, cities, bodies of water, mountains, deserts).[1]

A chart is defined as:

> c: a hydrographic map: a map on which is projected a portion of water and usually adjacent or included land intended especially for use by navigators. . . d: a small-scale representation of an area of the earth's surface, its culture and relief, and various aeronautical aids intended for use in air navigation.[2]

Maps are used by most people at least once during their lifetime. They have been in existence for centuries. In the Marianas Islands maps were used before pencils and paper were known. The islanders used charts called sea maps to navigate from one island to the next. These "stick charts" were constructed from coconut palms or pandanus reeds, woven and tied together to represent the direction of ocean waves between islands with cowrie shells attached at the appropriate intervals to symbolize the individual

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[1]Webster's Third New International Dictionary, 1961 ed., s.v. "chart."

[2]Webster's Third New International Dictionary, 1961 ed., s.v. "map."

islands. These charts are still used in the outer Marianas Islands today.

The islanders were not the only people without a written language who employed maps. Travelers were often directed by crude maps drawn in the dirt. These maps may have directed the inhabitants of North America as trails of arrows have been unearthed by archeologists.

Trips of any substantial length generally require the use of a map. Imagine planning a cross country trip without a map. Navigators and spacemen also enlist the necessary and often critical information from maps for their trips. However, map usage is not restricted to travelers, as events of the past are recorded on maps studied by historians.

Engineers have a more practical purpose for maps, using them for road-building projects. Road planners using a topographic map can decide a route considering the speed and safety of the travelers, the cost of construction and the effect of the new road on the lives of persons along the route.

The search for oil is facilitated by the geologist who employs topographical maps depicting the heights and shapes of land. Eliminating areas unable to contain oil saves time and cost.

Maps also play a large role in the recreational activities of people. Hikers, hunters and fishermen use maps to locate desirable sites. Star gazers turn to charts of the heavens to identify the constellations.

It can then be noted that maps serve many needs or purposes. As reference and source materials, maps are collected for three reasons: 1) educational--the collecting of maps to learn the basic geographical, historical, geological, and/or other facts about the regions of the earth and its relationship with the larger celestial systems; 2) utilitarian--the updating of older collections to avoid obsolescence within the collection; 3) scholarly--collecting maps to facilitate the understanding of the many diversions of the geographical disciplines.[1]

There are navigation charts of the Pacific islands, maps of moon craters and topographic maps of the United States, all published by the United States government. The uses of maps and charts are infinite as illustrated by Walter W. Ristow in the following quote:

> Contrary to popular belief, the utility of maps is not restricted to geographers and historians. In this complex and interesting world almost every field of human enterprise and activity has problems

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[1]Lynn S. Mullins, "The Rise of Map Libraries in America During the Nineteenth Century," Special Libraries Association, Geography and Map Division Bulletin, no. 63 (March 1966), p. 2.

which are best solved by information presented on maps.[1]

The United States government has published maps and charts for all of the needs mentioned and for others to be discussed in the following chapters.

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[1] Walter W. Ristow, "What About Maps?" Library Trends 4 (October 1955): 133.

CHAPTER II

CURRENT SELECTION TOOLS

It is difficult and many times impossible to locate current special forms of printed material on a desired subject. Maps are not an exception. E. B. Espenshade, in his article in the 1950 Library Journal, "No One Source for Acquiring Maps," notes that the major problems were a lack of well established bibliographic aids, the multitude of sources of maps, and the fugitive and documentary nature of maps.[1] These are the very same problems existing today as there is still no comprehensive index to United States government published maps.

As is the case in most subjects, periodicals offer the best available sources for current maps. The Monthly Catalog of United States Government Publications[2] indexes maps, but it must be remembered that the Monthly Catalog is arranged alphabetically according to the agency, department, bureau, service or another division of the United States government. This necessitates prior knowledge of the

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[1]Edward B. Espenshade, Jr., "No One Source for Acquiring Maps," Library Journal 75 (March 15, 1950): 431.

[2]U. S. Government Printing Office, Superintendent of Documents, Monthly Catalog of United States Government Publications (1895 to date).

divisions of government which publish and distribute maps or requires the use of the index. In the index the main entry "Maps and Charts" is further subdivided into the subject of each of the entries. The Monthly Catalog furnishes the price of the publication and the address for ordering it. This selection tool should be used to obtain the most current government published map accessible through public sale. Not all items listed are for sale. The Monthly Catalog contains only a percentage of all material published by the United States government. Most libraries subscribe to the Monthly Catalog of United States Government Publications, providing easy access to the periodical for the person desiring this knowledge of maps.

More selective sources published by the United States government are the Price List 53, Maps, Engineering, Surveying;[1] Price List 81, Charts and Posters;[2] and Price List 46, Soils and Fertilizers,[3] all of which include a limited number of maps. There are numerous other Price Lists documents which list some maps. Price List 53 notes

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[1]U. S. Government Printing Office, Superintendent of Documents, Maps, Engineering, Surveying Price List 53 (July 1972).

[2]U. S. Government Printing Office, Superintendent of Documents, Charts and Posters Price List 81 (February 1973).

[3]U. S. Government Printing Office, Superintendent of Documents, Soils and Fertilizers Price List 46 (May 1973).

sources of nautical, aeronautical, topographic, and other United States government maps with their places of distribution. The various price lists are issued irregularly and are available upon request at no charge from the:

Superintendent of Documents
United States Government Printing Office
Washington, D. C. 20402

Periodicals of a more specialized nature partially solve the problem of the acquisition process encountered by the map librarian. Surveying and Mapping,[1] a quarterly, published by the American Congress on Surveying and Mapping includes "Map Information," a section which describes large scale maps issued by the United States government agencies. "Distinctive Recent Maps," another section, focuses on special new maps available.

The Special Libraries Association, Geography and Map Division Bulletin,[2] a quarterly, contains a section, "New Maps" compiled by David A. Cobb, June Harris, and Albert G. Koerner. This is a classified list by country with complete bibliographical information. Maps and charts are also reviewed. The Bulletin is primarily designed for the large collection, but can be utilized in the smaller one.

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[1] Surveying and Mapping (Washington, D. C.: American Congress on Surveying and Mapping, 1941 to date).

[2] Special Libraries Association, Geography and Map Division Bulletin (Washington, D. C.: Special Libraries Association, 1950 to date).

The Western Association of Map Libraries, Information Bulletin,[1] previously the Western Association of Map Libraries. Newsletter, includes Government published maps. The association has also begun a new series of monographs, entitled Western Association of Map Libraries. Occasional Papers.[2]

New maps are discussed in "Geodesy, Mapping, Oceanography," a section of the bimonthly, Military Engineer,[3] issued by the Society of American Military Engineers. Professional Geographer,[4] the journal of the Association of American Geographers, regularly devotes several pages to maps in its bimonthly issues. In this journal maps are indexed annually under the heading "New Maps." Many of the associations also publish monographs such as Federal Government Map Collecting.[5]

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[1] Western Association of Map Libraries, Information Bulletin (Santa Cruz, Calif.: Western Association of Map Libraries, June 1970 to date).

[2] Western Association of Map Libraries, Occasional Papers (Santa Cruz, Calif: Western Association of Map Libraries, irreg.).

[3] Military Engineer (Washington, D. C.: Society of American Military Engineers, 1920 to date).

[4] Professional Geographer (Washington, D. C.: Association of American Geographers, 1943-48, 1949 to date).

[5] Special Libraries Association, Washington, D. C. Chapter, Federal Government Map Collecting (Washington, D. C.: Special Libraries Association, 1969).

Map library acquisition lists also provide valuable sources. The United States Library of Congress Quarterly Journal of Acquisitions[1] contains an article on recent important acquisitions in the Map Division once a year. The two outstanding map library lists are the University of Kansas New Books; Selected New Acquisitions in the University of Kansas Map Library,[2] issued irregularly, and the University of Illinois Map and Geography Library's New Acquisitions,[3] issued bimonthly. The latter is divided into three sections: maps, books, and serials. Other university acquisition lists are available from the University of Georgia, Illinois State University, Indiana University, University of Minnesota, and Northern Illinois University. All lists may be requested at no charge from the individual universities.

International Maps and Atlases in Print[4] by R. R. Bowker, released in 1974, offers an excellent current tool

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[1]Quarterly Journal of Acquisitions (Washington, D. C.: Library of Congress, 1943 to date).

[2]New Books; Selected New Acquisitions in the University of Kansas Map Library (Lawrence, Kansas: University of Kansas Map Library, irreg.).

[3]New Acquisitions (Champaign-Urbana: University of Illinois, Map and Geography Library, 1958 to date).

[4]Kenneth Winch, ed., International Maps and Atlases in Print (New York: R. R. Bowker, 1974).

for the map seeker. This is a relatively comprehensive work although it will rapidly be outdated in the coming years.

There are numerous other acquisition or selection tools available for maps. Incorporated in this chapter are only those specific commercial or general Government sources of current Federally published maps. The lack of bibliographic control of maps is overwhelming, compelling the person desiring a particular map to know the available sources of acquisition.

CHAPTER III

MAP EVALUATION

Accurate appraisal of maps in any subject area is difficult for the professional, much less the layman. It is therefore necessary to establish guidelines for the evaluation of maps. These factors must take into account the humans involved in the map construction process. In "Map Makers are Human," John K. Wright states:

> Maps are drawn by men and not turned out automatically by machines and consequently are influenced by human shortcomings. Although this fact itself is self-evident, some of its implications are often overlooked. The trim, precise and clean-cut appearance that a well-drawn map presents lends it an air of scientific authenticity that may or may not be deserved. A map may be like a person who talks clearly and convincingly on a subject of which his knowledge is imperfect. We tend to assume too readily that the depiction of the arrangement of the things on the earth's surface on a map is equivalent to a photograph, which, of course, is by no means the case. The object before the camera draws its own image through the operation of optical and chemical processes. The image on a map is drawn by human hands, controlled by operations in a human mind. Every map is thus a reflection partly of objective realities and partly of subjective elements. No map can be wholly objective.[1]

When selecting a map one might ponder such questions as: 1) For what purpose will the map be used? 2) What area

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[1]John K. Wright, "Map Makers are Human," Geographical Review 32 (October 1942): 527.

should the map include? 3) How large should the map be? 4) Is an index necessary? 5) What specific data are needed? 6) Must the map be colored or will black and white suffice? These factors might be considered when determining an evaluation procedure of map quality.[1]

In appraising or evaluating maps the criteria used is the same as the basic elements of map design, content and construction. In the "Evaluation of Modern Maps,"[3] three general appraisal categories have been suggested. The first, source material--the quality, quantity and up-to-dateness is determined. The best practices in cartography will indicate the sources of compilation in the margin. They may be references to previously published maps or to original surveys. Rarely is a map based solely on original surveys. The diagram of reliability shows the quality and character of the surveys and is employed by top mapmaking institutions. A compiled map should be evaluated on the basis of design since it contributes no source material. The date is to be included on a good quality map, although it may be difficult to locate.

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[1]John G. Fetros, "Developing the Map Collection in Smaller Libraries," Special Libraries Association, Geography and Map Division Bulletin, no. 85 (September 1971), p. 24.

[2]Richard Edes Harrison, "Evaluation of Modern Maps," Special Libraries 44 (February 1953): 45-47.

The second major consideration is the design of the map. The projection and the placement of the facts are important. Since the earth is three-dimensional, all maps are distorted when reduced to a two-dimensional sheet of paper. The smaller the scale, the more critical the distortion factor becomes. Space distortion can be calculated by comparing the angle the meridian forms with the parallel. On a globe this angle is ninety degrees.

Generalization, another part of design, is the reduction of certain details to the point of progressive elimination. At a stage in the scale it becomes impossible to depict prominent features creating the generalization factor. Verification is accomplished by comparison of the questionable scale to a larger map scale of reliability. Design must also incorporate general format and graphic treatment of type and linework, which is judged as one would the design of a book.

Execution involves the preparation of the actual drawings through the printing procedure. Many of the evaluation rules of books apply to the execution of maps with the addition of subtleties distinct to maps. Much information is depicted by symbols on a map. Each one must not interfere with the next in readability or continuity. Boundary lines alone will demonstrate the quality of the

cartographer. Lettering should be straight forward without flourishes or overpowering any other details.

Richard E. Harrison concludes his article stating:

> there is no royal road to appraising maps, because they are complex and may differ so widely in nature. The job is made a great deal easier when complete marginal information regarding date, source material, and relative reliability is included on the map. For those that do not carry this information, the evaluator must rely on his own geographical and cartographical knowledge.[1]

In a more recent article on the evaluation of maps Charles E. Current has established six evaluation criteria: visibility, size, amount of detail and suitability for grade level, color, durability and accuracy.[2] Visibility is the ability of maps to summarize information. Good visibility also allows for the teaching of a process and the pictorial representation of statistics.

Of utmost importance is the size of the map. Storage and display may be factors to be considered. The map must be the proper size to be utilized whether by a group or an individual. It must fit the required need.

Many times maps are unsuitable for the desired purpose as they contain too little or an abundance of detail.

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[1]Ibid., p. 47.

[2]Charles E. Current, "The Acquisition of Maps for School (and Other Small) Libraries," Wilson Library Bulletin 45 (February 1971): 578-79.

The map should always be obtained with the ability level and needs of the user in mind.

Color can facilitate the understanding of the map by highlighting certain factors, emphasizing relationships and contrasts. The absence of color does not indicate poor quality necessarily, but rather the proper use of color denotes value.

Durability is a great concern in the selection of a map. This is the potential value rather than the initial quality. Even if a map has a lesser durability factor, it may be strengthened by lamination, a cloth backing, or another available procedure. A large wall map should be reinforced to withstand continuous use.

Accuracy is a must when selecting a map. Verification of accuracy depends upon "the authority of the geographer, the precision of scale, the projection, the clarity of symbols used and the date of publication. . ."[1] Accuracy should not vary with the detail of the map.

In "The Problem of Maps" evaluation is summarized.

> A map is supposed to convey a picture. If it does this clearly, without confusing the reader, the chances are it is a good map. And if a map is drawn

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[1]Della Thomas and Helen Lloyd, Practical Storage and Use of Maps and Posters, n. 5 quoted in Current, "The Acquisition of Maps for School (and Other Small) Libraries," p. 578.

> to scale, with clean lines carefully laid down, with parallels of latitude and meridians of longitude indicated, the chances are it will be a fairly accurate map, though not necessarily so. Whether we realize it or not, all of us are capable of editing a map or chart which is badly done. Good maps are almost never badly printed.[1]

Fortunately, this is the case for Government maps. The United States maps issued by Federal agencies have become standardized since 1953. Guidelines were implemented by the Committee on a National Atlas of the United States. All Federal agencies were requested to standardize the size of the map sheet and related map features in order to build a looseleaf national atlas. Sixteen by twenty-two inch sheets or a size readily foldable to the same dimensions was determined to be the standard size. Other specifications, such as the scale of the map, the projection, width of binding margin and explanatory texts have been standardized. Regulations have facilitated the evaluation process of maps published by the United States government producing consistently high quality maps eliminating much of the tedious evaluation process for the person desiring a map.[2]

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[1]Lloyd A. Brown, "The Problem of Maps," Library Trends 13 (October 1964): 224.

[2]Laurence F. Schmeckebier and Roy B. Eastin, Government Publications and Their Use, rev. 2d ed. (Washington, D. C.: The Brookings Institution, 1969), p. 410.

CHAPTER IV

FEDERAL AGENCIES DISTRIBUTING MAPS

The Federal Government is the largest publisher in the world. It is no wonder, then, that it is also the most voluminous publisher of maps. Numerous agencies are major producers of original maps. Included in this text is a listing and general description of Federal agencies which produce maps. The listing is not exhaustive as many agencies did not respond to the inquiry sent to each of them.

Examples of the types of maps and their costs are mentioned. This information is not intended to be used for ordering purposes, but merely as examples of the types of available materials. As with all commerce, inflation has affected the government agencies, therefore precipitating a continual increase in costs. Most agencies issue a list of catalogues and/or indexes of their publications. These should be requested before proceeding with any ordering. It is necessary to carefully follow the instructions when ordering to avoid rejection of an order. Most Federal agencies will require advance payment for orders.

Questions about the availability of maps published by the United States government may be directed to:

National Cartographic Information Center
U. S. Geological Survey
National Center Building
12201 Sunrise Valley Drive
Reston, Virginia 22092

The National Cartographic Information Center, formerly the Map Information Office until July 1, 1974, is located within the United States Geological Survey.[1] The Center's primary purpose is not to sell or distribute maps, aerial photographs or control lists, but to disseminate information on the availability, location and ordering of materials.[2]

The mapping and surveying activities of Federal agencies were coordinated in 1919 by a Federal Board of Surveys and Maps to:

> establish a central information office in the Geological Survey for the purpose of collecting, classifying and furnishing to the public information concerning all map and survey data available in the several government departments and from other sources.[3]

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[1] Interview with Anne Strange, Secretary to the Chief, National Cartographic Information Center, Geological Survey, U. S. Department of Interior, Reston, Virginia, 21 November 1974.

[2] J. O. Kilmartin, "The Function of a National Map Information Office," Special Libraries Association, Geography and Map Division Bulletin, no. 48 (April 1962), p. 5.

[3] William B. Overstreet, "The National Cartographic Information Center," Special Libraries Association, Geography and Map Division Bulletin, no. 86 (December, 1971), p. 9.

This Board operated the Map Information Office until it was abolished by Executive Order in 1942. Subsequently, the Map Information Office was assigned to the Geological Survey by the Bureau of the Budget.[1]

Having grown from a one man office to a staff of more than thirty, the National Cartographic Information Center now has the capacity to handle more than 100,000 requests annually. When necessary, the office refers requests to the appropriate agency. There is no one location where a person may obtain complete cartographic information and place an order for the needed material. This present operation does not provide the user with a complete and responsive system.[2]

The National Cartographic Information Center acts as a central clearing house for maps, charts, and aerial photography information on the United States. It provides brochures, indexes to maps and answers to questions upon request. Some maps available at no cost are:

Status of Topographic Mapping in the United States

Status of Geologic Mapping in the United States

Status of Aerial Photography in the United States

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[1] Ibid.

[2] Ibid.

Index to National Topographic Maps of the U. S., 1:250,000

Index to Topographic Maps of the U. S., 1:1,000,000

The National Cartographic Information Center also has a variety of pamphlets available, some of which are of considerable value to the teacher or layman, such as the outdoorsman. Among the more useful free pamphlets are:

Types of Maps Published by Government Agencies

Topographic Maps: Silent Guides for Outdoorsmen

Topographic Maps

All of the materials are available at a nominal cost when ordered through the Government Printing Office. There are three agencies which sell maps and related cartographic materials, but do not produce them.

The first of the three specialized agencies is:

Superintendent of Documents
Government Printing Office
Washington, D. C. 20402

Maps are indexed in the Monthly Catalog of United States Government Publications or they may be included in Price List 53, Maps, Engineering, Surveying, distributed at no cost from the Government Printing Office.

The Superintendent of Documents primarily sells maps for Federal agencies issuing a relatively small quantity of maps. These agencies include the Bureau of the Census, the National Weather Service, the Soil

Conservation Service, the Post Office Department, the Bureau of Indian Affairs and the Federal Power Commission. Maps published jointly by agencies are also handled by the Superintendent of Documents. Some specific maps of interest include:

Apollo Mission 16 Lunar Photography Index Maps, prepared by the Defense Mapping Agency Aerospace Center.

Iceland, prepared by the Central Intelligence Agency

Number of Persons of Spanish Origin by Counties of United States 1970, prepared by Geography Division

The second specialized agency is:

Geography and Map Division
The Library of Congress
Washington, D. C. 20540

This library contains "the preeminent collection of maps and atlases in the world."[1] Established seventy-six years ago, its collection now contains 3,500,000 maps, more than 35,000 atlases and 8,000 reference books. Historical maps and atlases predominate the collection with annual additions averaging 90,000 maps and 1,200 atlases. Since surveying and mapping are accepted government functions and

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[1] Encyclopedia of Library and Information Science, 1973 ed., s.v. "Geographical Libraries and Map Collections," by John A. Wolter.

responsibilities, approximately 80 percent of the maps are received from official sources.[1]

Although no maps are for sale or for free distribution, the collection is available for reference work. Loans are made only to members of Congress, Federal agencies and authorized libraries. Reference service is available by correspondence and phone. The Library's Photoduplication Service sells reproductions of maps unless subject to copyright or other restrictions. "A little known but useful function within the Library is the cartographic work prepared by the Legislative Reference Service in Congressional reports and legislative committee studies produced by the Library of Congress."[2]

The Geography and Map Division distributes a bulletin, List of Publications, which includes publications available from various agencies. This bulletin is composed of information brochures, monographs, exhibit catalogs, short lists, reprints of articles, map facsimiles and journals with the necessary information for ordering. Most

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[1]U. S., Library of Congress, Geography and Map Division, Geography and Map Division: List of Publications (July 1974), p. 1.

[2]Catherine I. Bahn, "United States Government Mapping Agencies: Recent Activities and Changes," Special Libraries Association, Geography and Map Division Bulletin, no. 76 (June 1969), p. 11.

of the items listed are free from the Geography and Map Division. This is an excellent source available to the public for a general overview of articles on maps.

Among currently available Library of Congress publications are:

A Descriptive List of Treasure Maps and Charts in the Library of Congress

Guide to the History of Cartography; An Annotated List of References on the History of Maps and Mapmaking

Land Ownership Maps; A Checklist of Nineteenth-Century United States County Maps in the Library of Congress

United States Publishers and Distributors of Three-Dimensional Plastic Maps and Globes

All of these publications are for sale by the Superintendent of Documents, Government Printing Office.

The third specialized agency is:

Cartographic Archives Division
National Archives and Records Service
Washington, D. C. 20408

The National Archives and Records Service is the official depository for all records of enduring value produced or accumulated by the United States Government. They are responsible for preserving the records and making them available to Government officials, scholars and the general public. The Cartographic Archives Division houses over

1,600,000 maps and approximately 2,250,000 aerial photographs.[1]

A descriptive pamphlet, Cartographic Archives Division, published by the General Services Administration, describes available types of materials from the National Archives and Records Division. Included are Special Lists which describe records more specifically. They deal with the records of a specific agency, records pertaining to a specific topic, historical period or geographical area, or special types of records, such as aerial photographs. Examples of these currently available are:

Cartographic Records of the Bureau of Agricultural Economics

List of Selected Maps of States and Territories

Pre-Federal Maps in the National Archives: an Annotated List

Aerial Photographs in the National Archives

Also obtainable are unpublished Resource Papers which are produced in connection with scholarly conferences. Though varying widely in length, style, and subject all are informal descriptions of records relating to either an agency, subject or geographical area. Two topics of interest are:

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[1]U. S., National Archives, National Archives and Records Service, General Services Administration, Cartographic Archives Division General Information Leaflet No. 26 (October 1973), p. 1.

Cartographic Records in the National Archives Relating to Indians in the United States

Cartographic Records in the National Archives Useful for Urban Studies

All of the listed materials are available at no cost from the National Archives and Records Service.

The Guide to Cartographic Records in the National Archives is a comprehensive survey of all cartographic holdings in the National Archives. Unfortunately, this guide, once available from the Superintendent of Documents, is now out-of-print.

As has been noted, these three specialized agencies distribute, but do not publish, maps. The following chapters pertain to those Federal departments and agencies which publish maps and charts.

CHAPTER V

DEPARTMENT OF THE INTERIOR

Established in 1879 by Congress, the United States Geological Survey (USGS) is the most productive of the civilian mapping organizations. The primary work of the Survey is divided into four divisions--topographic, geologic, water resources and conservation. The Geological Survey is:

> the Nation's principal source of information about the configuration of the land surface, the composition and structure of the rocks at and beneath the surface, the distribution and character of its energy, mineral, and water resources, and the nature of natural geologic processes. . .[1]

One of the major responsibilities of the Topographic Division is the preparation and maintenance of topographic maps which are:

> graphic representations of selected manmade and natural features of a part of the earth's surface plotted to a definite scale. The distinguishing characteristic of a topographic map is the portrayal of the shape and elevation of the terrain.[2]

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[1] U. S., Department of the Interior, Geological Survey, New Activities at the U. S. Geological Survey (1974), p. 1.

[2] U. S., Department of the Interior, Geological Survey, Topographic Maps (April 1969), p. 2.

These maps are employed in geologic and hydrologic studies, such as comparing and selecting dam sites; planning and installing communication and highway systems; and developing programs for flood control, soil conservation and reforestation. They are also popular for recreationists in planning their activities.

This mapping agency produces standard quadrangle and special maps which constitute the National Topographic Map Series. These maps depict the fifty States, American Samoa, Guam, Puerto Rico, the Virgin Islands, and Antarctica. Physical changes by man and nature necessitate constant revision of the maps. To update the maps, photo revision is employed.

Index maps of the National Topographic Map Series are prepared for each individual state, United States possessions and territories. These are free upon request and show the areas covered by published maps.

One series of general topographic quadrangles is composed of seven and one-half minutes of latitude and longitude on a scale of 1:24,000. An inch of map represents 2,000 feet in reality, with the quadrangle covering 49 to 70 square miles depending upon the specific quadrangle. The fifteen minute quadrangle series respectively covers 197 to 282 square miles, is on a scale of 1:62,500 whereby one inch

is approximately equivalent to one mile. Each quadrangle is designated by the name of the town, city, or prominent natural feature within it and names of adjoining published quadrangles are printed in the margin. Only about two-thirds of the country is mapped, while the rest is under compilation. Black and white advance sheets are available when the quadrangle is not yet completed in final form.

The entire United States is mapped according to a 1:250,000 scale, each covering 4,580 to 8,669 square miles and 1° by 2°. The continental United States and Hawaii are completely covered by 473 multi-color maps and Alaska is depicted by 153 other maps in this series. Mapping of the United States ranges from letter size 1:16,500,000 scale to a two-sheet wall map 1:2,500,000 scale. Unfortunately, mapping of the United States has not been completed.

A special series of state maps is published, showing counties, locations and names of all cities and towns, and most of the smaller settlements and railroads, rivers, many of the smaller streams and other water features. State maps do not show contours. Smaller states are combined on one sheet, while larger states, such as Texas, may require as many as four sheets. State maps are published at either or both scales of 1:500,000 and 1:1,000,000.

Other special series include Metropolitan Areas Topographic Maps, on a 1:24,000 scale, covering more than sixty major metropolitan areas in the United States and Geodetic Control Diagrams available in list form from the United States Geological Survey.

To request indexes or purchase maps by mail the following addresses must be contacted. Maps of areas east of the Mississippi River including Minnesota, Puerto Rico and the Virgin Islands must be obtained from:

Branch of Distribution
U. S. Geological Survey
1200 South Eads Street
Arlington, Virginia 22202

Maps of areas west of the Mississippi River including Alaska, Hawaii, Louisiana, American Samoa, and Guam should be ordered from:

Branch of Distribution
U. S. Geological Survey
Federal Center
Denver, Colorado 80225

Sales counters, where local area maps may be purchased, are maintained in many Geological Survey Offices.

The National Atlas of the United States has been made accessible in separate sales editions. These sheets vary in price from one dollar to one and a half dollars. A list of the separate sales editions is available from the Geological Survey Office in Arlington, Virginia.

A new kind of map product, the orthophoto map, has been developed on which land features are portrayed by color-enhanced photographic images and selected cartographic symbols. Ideally suited for transportation planning; urban renewal and development; and geologic, hydrologic, and engineering studies; the orthophoto map depicts an area in greater detail than a conventional line map. Orthophotoquads, basic photoimage maps, are prepared as map substitutes in otherwise unmapped areas and as complements to existing line maps. Some 1,500 orthophotoquads will be produced in the fiscal year 1974, so as to complete coverage of all unmapped areas of the United States by 1978.[1] The advantages to this type of production are: preparation of maps in less time and at less cost than other topographic maps, planimetric detail is shown for the entire map and the basic geodetic control is the only required field work.[2]

Another new method of mapping, slope mapping, prepared by photomechanical methods, shows the inclination of the land surface in several categories, facilitating

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[1]U. S., Department of the Interior, Geological Survey, New Activities at the U. S. Geological Survey (1974), p. 2.

[2]Mary Galneder, "Aerial Photographs: The First Hundred Years," Special Libraries Association. Geography and Map Division Bulletin, no. 69 (September 1967), p. 22.

identification. Computers are also being used to collect information by remote sensing and produce land maps.

Topographic maps by the Geological Survey are produced in cooperation with other Federal agencies--the Defense Mapping Agency Topographic Center, the National Ocean Survey, the Tennessee Valley Authority, the Forest Service and the Mississippi River Commission. These maps are incorporated into the National Topographic Map Series.

Occasionally, State or local agencies jointly participate with the Federal government to complete mapping projects. This expedites the mapping, helping to complete the National Topographic Map Series.

The Geological Survey Geologic Division conducts research on the geology of the United States. The geologic map "uses line or color patterns and various symbols to show what kinds of rocks are exposed at the surface, and the probable shapes and structures of the various rock units at depth."[1] These maps are employed in determining the location, depth, and dimensions of economically valuable bodies of rock. Geologic maps also show the depth to potential water- or oil-bearing beds below the surface of the earth; the distribution of rocks favorable for

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[1] U. S., Department of the Interior, Geological Survey, U. S. Geological Survey (1970), p. 6.

construction sites or unfavorable due to potential weak zones.[1] Geologic maps are interpretive and are primarily a method of recording and presenting data in a compact and systematic form.

In the Geologic Division, the Center for Astrogeology, near Flagstaff, Arizona, has been simulating lunar exploration tests. These studies are to support the National Aeronautics and Space Administration. Lunar mapping is accomplished through the use of telescopic observations and photographs. The Geological Survey compiles the terrain and geologic maps of the moon and Mars on base maps prepared by the United States Air Force. Through astrogeology the Geological Survey contributes to the knowledge of the earth and the solar system.

The Geological Survey supports its cooperative program with NASA through the Earth Resources Observation Systems Program. The satellite transmits frequent hydrologic, seismic and volcanologic data to ground base stations.

The Geologic Division publishes a series of professional papers and bulletins, each on a specific topic of research. These publications contain detailed maps of the concerned subject. Complete lists of the completed papers and bulletins are available from the Geological Survey,

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[1] Ibid.

although the publication itself must be acquired from the Superintendent of Documents. The cost starts at approximately one dollar.

Other types of geologic maps that are constructed include the Geologic Quadrangle Maps, Mineral Investigation Maps, Mineral Resource Maps, Oil and Gas Maps, and Hydrologic Investigations which may be in the form of an atlas or folded in water supply papers, professional papers or bulletins as previously discussed.

The Water Resources Division is responsible for evaluating the quality and quantity of the Nation's water. At the present time, they are particularly interested in mapping the flood plains for the Department of Housing and Urban Development. The flood plain maps are used to acquire Government flood plains insurance and to aid in the planning of flood plain use.

As has been demonstrated, the United States Geological Survey has an overwhelming mapping capacity. The Survey distributes more than 9,000,000 map copies per year from an inventory of 83,000,000 copies of 45,000 maps.[1] It freely distributes many excellent pamphlets at no cost describing the Survey's available products. Maps are listed in the

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[1] U. S., Department of the Interior, Geological Survey, The United States Geological Survey (February 1974), p. 22.

free pamphlet, New Publications of the Geological Survey, which may be requested from the Geological Survey.

Unless otherwise specified, the topographic, hydrologic, and mineral resource maps are all available from the Geological Survey as well as moon maps and those of Antarctica. Many of the maps are available over the counter or from authorized commercial dealers.

The Department of the Interior is composed of many other governmental divisions which produce maps. The Bureau of Land Management, formerly the Office of the Surveyor General dating back to 1796, executes boundary surveys of public domain which include national parks, Indian reservations, national forests, reclamation projects, federal reservations, grazing districts, and national wildlife refuges. The bureau produces wall maps of the United States, its territories and possessions. They are for sale from the Superintendent of Documents.

The National Parks Service, in conjunction with the Geological Survey, has mapped the national parks, monuments and historic sites. Although these maps are available from the Superintendent of Documents at a nominal cost, they may often be obtained without charge from the individual park, monument or historic site of interest.

Less productive are the Bureau of Mines, the Reclamation Bureau, the Fish and Wildlife Service, the Outdoor Recreation Bureau, and the Bureau of Indian Affairs. The latter publishes the map of Indian Land Areas available from the Superintendent of Documents and Three Maps of Indian Country, obtainable directly from the Bureau of Indian Affairs.

The Department of the Interior, the Nation's principal conservation agency, supports its program of protecting our natural resources partially through research and its end product--maps.

CHAPTER VI

DEPARTMENT OF COMMERCE

The Department of Commerce is composed of many map producing agencies, the most prolific being the National Ocean Survey. The United States Coast Survey, as it was known until 1878, was formed in 1807 making it the oldest scientific agency in the Federal government. The primary responsibility is the preparation of navigational charts of coastal waters of the United States and later included aeronautical charts of all United States airways along with associated fields including oceanography, geodesy, photogrammetry, and marine technology. The Environmental Science Services Administration (ESSA) included the Coast and Geodetic Survey from 1965 to 1970. Since 1970 the agency has come under the National Oceanic and Atmospheric Administration (NOAA) with a restructuring that changed the name to the National Ocean Survey and broadened its scope of charting to include waters of the Great Lakes, formerly administrated by the United States Lake Survey, Army Corps of Engineers.[1]

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[1]William A. Stanley, Chief, Physical Science Services Branch, National Ocean Survey, National Oceanic and Atmospheric Administration, U. S. Department of Commerce, letter to Jane M. Low, 25 October 1974.

The principal products of the National Ocean Survey are nautical and aeronautical charts, which are basic tools needed to maintain the Nation's sea and air transportation systems. These products and technical services, necessary to promoting, fostering, and developing industry and commerce in the United States, are:

> requisites in planning and operating extensive programs in other forms of communications, development of natural resources, hydrography and oceanography, agriculture and reclamation, public works and urban planning, and other programs affecting economic development.[1]

One of America's oldest scientific products is the nautical chart. With more than 2.5 million charts distributed annually, they are vital in safeguarding water traffic and in jurisdictional disputes over boundaries. Charts, tide tables, coast pilots, current tables and tidal current charts are published in three separate indexes covering the United States, its territories and possessions:

Nautical Chart Catalog 1: United States Atlantic and Gulf Coasts Including Puerto Rico and the Virgin Islands

Nautical Chart Catalog 2: United States Pacific Coast Including Hawaii, Guam and Samoa Islands

Nautical Chart Catalog 3: United States Alaska Including the Aleutian Islands

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[1] U. S., Department of Commerce, Environmental Science Services Administration, The Coast and Geodetic Survey: Its Products and Services (1966), p. 2.

These catalogs list the nautical charts and related publications of the National Oceanic and Atmospheric Administration, National Ocean Survey.

Specially designed for the small-craft operator are small-craft charts which include folio charts, route charts, charts of the intracoastal waterways, and those types of conventional charts with special information for the small craft.

Conventional flat nautical charts are assigned to one of the following scales: harbor charts (1:50,000 and larger) intended for navigation and anchorage in harbors and waterways; coast charts (1:50,000 to 1:100,000) designed for coastwise navigation inside the offshore reefs and shoals, when entering bays and harbors of considerable size, and for navigating certain inland waterways; general charts (1:100,000 to 1:600,000) intended to be used for navigation of vessels whose positions can be fixed by landmarks, lights, buoys, and characteristic soundings, but whose courses are well offshore; and sailing charts (smaller than 1:600,000) intended for offshore sailing between distant coastal ports and for approaching coasts from the open ocean.[1] Cost is approximately $2.00 each.

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[1]U. S., Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Survey, Publications for Safe Navigation (December 1973), p. 3.

All charts are revised at regular intervals. When ordering, the most up-to-date chart should be requested as critical natural and artificial changes may have occurred since the previous revision. Charts and indexes may be obtained from:

National Ocean Survey
Distribution Division (C44)
6501 Lafayette Avenue
Riverdale, Maryland 20840

A list of authorized dealers from which charts may be purchased is printed in each chart catalog.

Publications for Safe Navigation describes the types of charts produced by the National Ocean Survey. Safety hints and other general information are printed in the leaflet, available from the National Ocean Survey.

In combining Federal organizations with related missions the United States Lake Survey was transferred to the Department of Commerce on October 3, 1970.[1] The Survey is repudiated to publish "the best nautical charts in the United States which is largely due to the regular updating of all charts."[2]

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[1]U. S., Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Survey, "Addendum" (n. d.), p. 1. (Mimeographed.)

[2]James E. Bunch, "Mission of the U. S. Lake Survey," Journal of the Surveying and Mapping Division 96 (September 1970): 183.

The 1974 Chart Catalog: Great Lakes and Adjacent Waterways indexes the nautical charts, recreational charts, hydrographic service charts and those of the Lower Hudson River. Navigational data, charts and maps of other agencies on inland waterways, other Survey publications, historical maps of the Great Lakes and general information are printed in the chart catalog. The Great Lakes Pilot with supplements provides updates for the fresh water mariner. The Great Lakes Profile furnishes the minimum and maximum depths of the lake-chain. These may be requested from the National Ocean Survey.

The Survey, supporting air commerce and civil aviation, publishes Aeronautical Charts and Related Publications. This catalog indexes the United States on one side and world coverage and auxiliary publications on the verso. The aeronautical charts of the United States are published and distributed by the National Ocean Survey whereas foreign area charts are published by the Defense Mapping Agency Aerospace Center (DMAAC) and are sold to civil users by the National Ocean Survey. Only selected series of DMAAC charts are listed in the catalog.

Numerous types of aeronautical charts are printed for the aviator. These charts include:

Sectional and VFR Charts--for visual navigation of slow/medium aircraft

Enroute Low Altitude Charts--for enroute navigation in the low altitude stratum

Enroute High Altitude Charts--for enroute instrument navigation in the high altitude stratum

World Aeronautical Charts (WAC)--to provide a series of aeronautical charts, covering land areas of the world, at a size and scale convenient for navigation by moderate speed aircraft

Planning Charts--to fulfill the requirements of pre-flight planning for VFR and IFR operations

Instrument Approach Procedure Charts--to portray data required to execute instrument approaches to airports

Taxi Charts--for selected city airports

Standard Instrument Departure (SID) Charts--to expedite clearance delivery and to facilitate transition between take-off and enroute operations

Standard Terminal Arrival Route (STAR) Charts--to hasten air traffic control arrival route procedures and to ease transitions between enroute and instrument approach operations

Aircraft Position Charts--for plotting lines of position from celestial observations and electronic aids, generally for long-range flights over extensive water or desert areas

Global Navigation Charts--for aeronautical planning, operations over long distances, and enroute navigation in long range, high altitude, high speed aircraft

Jet Navigational Charts--for high speed, high altitude, long range navigation

Operational Navigation Charts (ONC)--for the same purpose as World Aeronautical Charts series only shaded relief and contours included

Universal Water Charts--for use in place of World Aeronautical Charts over extensive water

The Operational Navigation Chart is replacing the World Aeronautical Chart outside the continental United States. As the list indicates, the coverage is extensive; copious other charts are indexed and available from the National Ocean Survey Distribution Division. The prices start at approximately fifty cents per chart. Authorized Aeronautical Chart Agencies lists commercial agents who stock many of these charts.

The National Oceanic and Atmospheric Administration conducts extensive, advanced research in marine fisheries, on oceanic processes, geomagnetism, seismology, sea-air interactions and numerous other related topics. The Scientific Exploration and Mapping Program (SEAMAP) produces bathymetric maps contained in many of the NOAA Technical Report Series sold by the Superintendent of Documents. Indexes for bathymetric and geophysical maps are available for the United States and the adjacent continental shelf and for the North Pacific Ocean.

Vital to daily living is the National Weather Service, a branch of the National Oceanic and Atmospheric Administration. The linking of surface weather stations, upper-air stations, weather radar and the earth-orbiting environmental satellites transmit observations to the

National Meteorological Center. Together computers and meteorologists analyze and forecast the weather future for the United States and the northern hemisphere from surface to 100,000 feet.

The Average Monthly Weather Outlook, prepared by the Long Range Prediction Group at the National Meteorological Center, is published by the National Weather Service. The forecast primarily predicts the temperature and precipitation over the thirty day period. Mean contours, showing the prevailing air flow pattern at about 10,000 feet, and a table of normals and class limits are included. Subscriptions for $7.50 per year or separate copies (for thirty-five cents per copy) of Outlook may be purchased from the Superintendent of Documents. Daily Weather Maps are also available at $3.50 per year.

The National Weather Service is not limited to general weather, but also answers urgent needs of possible natural hazards. Hurricane and toronado watch centers are located throughout the country. In addition to the special maps and charts published, the Marine Weather Services Charts are sold by marine chart dealers or the National Ocean Survey at a nominal cost. Issued periodically, the charts contain information on broadcast schedules of radio stations, National Weather Service office telephone numbers

and location of warning display stations. Lists of available charts are free upon request from the National Ocean Survey.

Concerned with climatography, the Environmental Data Service of the National Oceanic and Atmospheric Administration publishes a series, Climates of the States. Available from the Superintendent of Documents, this series includes a description of the particular state's weather, tables and maps on precipitation, temperature, and storm damage. The National Oceanic and Atmospheric Administration develops and disseminates environmental and scientific data for the Department of Commerce.

To further demographic knowledge the Bureau of the Census compiles statistics for the United States, its territories and possessions. Six major types of map-atlas materials published by the Bureau of the Census, but sold by the Superintendent of Documents, are available:

Basic Maps--the United States County Map (1:5,000,000) showing all county lines; state-county subdivision maps (scale varies) showing subdivisions of counties and location of all incorporated places and those unincorporated places which had separate population figures published

GE-50 United States Maps--colored thematic map series (1:5,000,000) covering the United States in a single sheet. Latest maps are: No. 56, Median Family Income for 1969, by Counties of the United States; 1970 and No. 57, Per Capita Money Income for 1969, by Counties of the United States

GE-70 United States Maps--a new thematic series with only the first map (1:7,500,000) published, Population Distribution, Urban and Rural in the United States: 1970 (nighttime view)

Metropolitan Map Series (MMS) Maps--a map series (1:2,500) known as the Block Statistics HC (3) Series giving statistical data for 236 urbanized areas; the remainder relating to areas (small cities, counties, etc.), which contracted with the Bureau to provide block statistics based on the 1970 census. Included as an enclosure to each report are a series of maps, identifying all areas for which data is presented, with a key map showing the extent of map coverage in each area.

Census Tract Maps--a series (scale varies) known as the PHC (1) Series giving statistical data for each of 241 Standard Metropolitan Statistical Areas (SMSA's). Also included are maps showing the extent and boundaries of tracts.

Congressional District Atlas, 1973--depicting boundaries of the 135 congressional districts of the 93rd Congress which convened in January, 1973. Maps show congressional districts for each State; each county that is divided between two or more congressional districts; and each small complexly divided area where congressional district boundaries follow streets, corporate limits, streams, and other difficult-to-locate features.

Small-scale statistical maps have been prepared and published by the Bureau as a part of individual volumes of the 1970 Population and Housing Censuses. These useful items have been republished in special "Graphic Summary" Reports: Series PC(S1), Report 55 for the Population Census and Series HC(S1), Report 16 for the Housing Census. The Geography Division is also responsible for cartographic work of the 1969 Census of Agriculture, Vol. V, Part 15.

This report profiles the Nation's agricultural system in a series of more than 200 United States maps.

Leaflets describing each type of map and listings of the maps which compose the individual series are available, at no charge from the:

Bureau of the Census
Department of Commerce
Washington, D. C. 20233

CHAPTER VII

DEPARTMENT OF DEFENSE

Department of Defense

"For the good of the country,"[1] the motto of the Defense Mapping Agency, exemplifies the purpose of the Agency which supports the national defense system. Consolidation of the Defense Intelligence Agency (DIA) mapping, charting and geodesy staff, the United States Army Topographic Command (USATOPOCOM), the United States Air Force Aeronautical Chart and Information Center (ACIC), the mapping, charting and geodesy production and distribution resources of the Naval Oceanographic Office (NAVOCEANO), the Inter American Geodetic Survey (IAGS), the Department of Topography of the United States Army Engineer School (USAES), the 1st Geodetic Survey Squadron of the Aerospace Cartographic Geodetic Service (ACGS), the mapping, charting and geodesy resources of the 15th Reconnaissance Technical Squadron (15th RTS), and the Navy Satellite Geophysics Project to form the Defense Mapping Agency was a result of

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[1] U. S., Department of Defense, Defense Mapping Agency, Putting It All Together by Howard W. Penney (Washington, D. C.: Defense Mapping Agency, n.d.), p. 4.

the Blue Ribbon panel requested by President Richard Nixon in 1971.[1]

The Defense Mapping Agency, under the concept of maximum decentralization of operating authority, is composed of five main divisions. Aerospace and missile weapon systems support is provided by the DMA Aerospace Center (formerly ACIC). Ground weapon systems and land combat support is provided by the DMA Topographic Center (formerly USATOPOCOM). Naval weapon systems and statutory nautical chart support is provided by the DMA Hydrographic Center (formerly NAVOCEANO). The Department of Topography, USAES, has been redesignated the Defense Mapping School. The Inter American Geodetic Survey has retained its identity and has essentially the same mission and functions as before the consolidation.

The Defense Mapping Agency Aerospace Center (DMAAC), St. Louis, Missouri, was established July 1, 1972 to meet the aerospace mapping, charting and geodesy requirements of military organizations in the Department of Defense.[2] To meet the rapid response operational requirements of the

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[1]Interview with David Black, Defense Mapping Agency Aerospace Center, St. Louis, Missouri, 8 November 1974.

[2]U. S., Department of Defense, Defense Mapping Agency, "Defense Mapping Agency Aerospace Center" (n.d.), p. 1. (Mimeographed.)

field, DMAAC has Flight Information Offices located worldwide. Two squadrons, the Geodetic Survey and the Cartographic Technical, are located in Wyoming and California respectively.

The Geodetic Survey Squadron provides Department of Defense elements with precise geodetic and instrumentation surveys in support of strategic and tactical missile systems, aerospace tracking and data acquisition systems, weapon support systems and special projects. The Cartographic Technical Squadron manages the activities engaged in the production of the target intelligence of a graphic for use in training, planning, executing, and evaluating operations against designated targets by one or more weapons systems.[1]

The Center's production is divided into four major programs: navigation and planning charts, flight information publications, air target materials, and special products. The navigation and planning series include the Joint Operation Graphics, Tactical Pilotage Charts, Operational Navigation Charts, Jet Navigation Charts, Global Navigation and Planning Charts, Loran Charts, Missile Planning Charts and Department of Defense Weather Charts. Air Target Materials include Air Target Charts, Mosaics and Missile Target Data Sheets. Flight Information

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[1] Ibid.

Publications (FLIPs) are produced for the planning, enroute and terminal phases of aircraft operation. The charts cover the entire free world. The Department of Defense Catalog of Aeronautical Charts and Flight Information Publications contains detailed information on the aeronautical products available. The Department of Defense Bulletin provides an updating for the Catalog.

Charting of the earth is not the only assignment given DMAAC. Lunar and Martian charting has become another important support function. For the Skylab manned space missions, this facility produced hundreds of cartographic items at the request of NASA. The Defense Mapping Agency produces 85 to 95 per cent of all maps and charts NASA requires, including operation support graphics, scientific exploration graphics, as well as cartographic items supporting recovery operations.[1]

In addition to providing target positioning support to air strike forces, DMAAC supplied virtually all of the aeronautical charts and FLIPs used by the Air Force, Navy and Army forces operating in or supporting Southeast Asia.

Located at Brookmont, Maryland, the mission of the Topographic Center is to contribute to the effectiveness of

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[1] Interview with David Black, Defense Mapping Agency Aerospace Center, St. Louis, Missouri, 8 November 1974.

the Nation's land combat forces. The Topographic Center discharges this assignment by providing identification and accurate positioning of the features on the surface of the earth in the form of geodetic data, digital information and topographic maps in various forms.

The Defense Mapping Agency Topographic Center fulfills a key mission in an era when first-class mapping, charting and geodesy products are essential to realize the full potentiality of new weapons.

To produce and distribute maps, geodetic data, and related information to land combat forces with improved efficiency, the Army Map Service as it was originally known was enlarged into the Army Topographic Command in 1968.[1] In 1972 production activities of the Army Topographic Command were assigned to the Topographic Center of the newly created Defense Mapping Agency, with the Topographic Center also providing technical support and guidance to Army and Marine Corps topographic units.

Almost all subdisciplines in the fields of applied physics and engineering contribute to mapping, charting and geodesy activities, applied in such major undertakings as the precise measurement of the size and shape of the earth,

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[1]U. S., Department of Defense, Defense Mapping Agency, "Defense Mapping Agency Topographic Center" (n.d.), p. 2. (Mimeographed.)

determination of the earth's gravitational field and portrayal of functional and spatial qualities of detailed features on the earth's surface.[1]

Aerial photography and the use of improved optical systems both in camera and photogrammetric instruments have brought speed and a high degree of accuracy to the map-making process and today the Topographic Center produces maps of many scales, sizes and types and is continuing development of digital mapping techniques as well as other new mapping processes.

The Topographic Center is in the forefront in the use of high speed computers, continuing a pace set when as the Army Map Service, it became one of the first government agencies to turn to the use of a large-scale computer. At the Defense Mapping Agency Topographic Center, the data processing services provided involve complex computations incorporating geodetic satellite orbit determination, geodetic triangulation adjustment, analytical photogrammetry and digitized map plotting.[2]

At the Topographic Center's base plant and field offices many new items of equipment are in use which include the Universal Automatic Map Compilation Equipment;

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[1] Ibid., p. 3.

[2] Ibid.

Symbols, Names and Placement System; the AS-11 Analytical Stereoplotters; digitizers; electronic data plotters and geoceivers.[1]

The Topographic Center is functionally organized into seven production departments. The Departments of Technical Services, Computer Services and Geodesy are primarily servicing departments and those of Cartography, Field Offices and Graphic Arts are the map production elements.

All of the basic source material and all of the geodetic information pertaining to a particular project becomes the input for the Department of Cartography and are used to construct maps, charts, prototype topographic products and allied materials. The List of Maps on Public Sale may be obtained from the Center in Washington. An index to each of the series available may be purchased for five cents apiece. The index shows the geographic area covered by individual map sheets in a series and provides information on map content and characteristics. Maps are published on geographic or country areas and are in detail as the Railroad Map of the United States or the East Asia Road Map. Pictorial lunar and Mars maps may also be procured from the:

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[1] Ibid., p. 4.

Defense Mapping Agency, Topographic Center
ATTN:5520
Washington, D.C. 20315

Plastic relief maps (1:250,000) of Continental United States and Hawaii may be obtained by contacting:

T. N. Hubbard Scientific Company
2855 Shermer Road
Northbrook, Illinois 60062

The Defense Mapping Agency Topographic Center has field offices in operation at Kansas City, Missouri; Louisville, Kentucky; Providence, Rhode Island; and San Antonio, Texas, and these field offices sell some maps.

Originating in 1830, the Defense Mapping Agency Hydrographic Center (DMAHC) was established in 1972 under a Presidential directive. The Center became the focal point for all the navigational material required by the Navy and Merchant Marine. This includes improving the navigational capability of the Navy and Merchant Marine, and adding to the military combat readiness status by providing accurate and inexpensive nautical charts, sailing directions, and related navigational data. In addition, the Center performs or recommends research, development, testing and evaluation, and conducts other programs related to its Mapping, Charting, and Geodesy (MC&G) mission.[1]

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[1]U. S., Department of Defense, Defense Mapping Agency, "Defense Mapping Agency Hydrographic Center" (n.d.), p. 1. (Mimeographed.)

The Nautical and Information Department collects and consolidates incoming navigational information to insure the various charts and navigational aids are current and accurate. Working from surveys, foreign charts, aerial photos, and other documented sources, revisions are completed and available to the numerous users. This includes daily radio broadcasts consisting of critical information and the weekly Notice to mariners reflecting the latest publication and chart corrections.

Many of the charts and navigational aids produced are sold to various Government agencies, commercial shipping companies, and independent boat owners. To update this vast quantity of charts, the Center depends upon a constant information flow from the Navy, Merchant Marine, other Government agencies, and international mapping, charting and geodesy activities.

Publications of the Center include:

The World General Nautical Charts
Great Circle Sailing Charts
Polar Charts
Omega Lattice Charts
Omega Propagation Tables
North Polar Loran C Charts
Air/Surface Loran Charts
Loran Rate Tables
Auxiliary Loran Charts and Diagrams
Great Circle Tracking Charts
National Ocean Survey Coast Pilots
List of Lights and Sailing Directions
Nautical and Navigational Publications
Oceanographic Publications

Special Materials
Coast Guard Publications
Omega Plotting Charts
General Bathymetric Charts of the Oceans

These are indexed in the Catalog of Nautical Charts: Miscellaneous and Special Purpose Navigational Charts, Sheets and Publications available at no cost from the Defense Mapping Agency. Purchases should preferably be made from local sales agents listed in the catalog. If necessary, orders will be accepted at either of the following distribution points:

Defense Mapping Agency
Hydrographic Center Depot
Clearfield, Utah 84016

Defense Mapping Agency
Hydrographic Center Depot
5801 Tabor Avenue
Philadelphia, Pennsylvania 19120

In addition, the Defense Mapping Agency Hydrographic Center has eight field offices, which handle all Navy requests for mapping, charting and geodesy materials required for their fleet operations.

In the mid 1940's, the Pan American Institute of Geography and History (PAIGH) asked the United States to establish an agency to coordinate, promote and encourage cartographic studies in the Latin American countries. To satisfy this requirement, the Inter American Geodetic Survey (IAGS) was founded in 1946. From its formation in

1946 to June 1972, the Inter American Goedetic Survey was staffed and managed by the Corps of Engineers. Then on July 1, 1972, the Inter American Goedetic Survey became one of the major components of the Defense Mapping Agency.[1]

The overall goal of the Inter American Goedetic Survey is to make the countries of Latin-America self-sufficient cartographically. Towards that end, the Inter American Goedetic Survey has been involved in the formation of many cartographic agencies throughout Latin America.

Most of the photography used in Latin America has been acquired by the United States Air Force. The Inter American Goedetic Survey is currently implementing the "Latin American Doppler Plan" which uses satellite surveys to replace the more time consuming and expensive conventional methods of geodetic point positioning. New and impressive cartographic agencies throughout Latin America bear witness to the importance now given to mapping these countries.[2]

The Defense Mapping School is responsible for instruction in military cartography and related subjects. It is the only school within the United States that provides

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[1]U. S., Department of Defense, Defense Mapping Agency, "Inter American Geodetic Survey" (n.d.), p. 1. (Mimeographed.)

[2]Ibid., p. 3.

college level functional training in all aspects of mapping, charting and geodesy, to include graphic arts reproduction and cross training in the topographic sciences.

With the consolidation of the agencies to compose the Defense Mapping Agency, the economic factor has lessened. Expenses have been significantly reduced. About two-thirds of the effort is expended for maintaining up-to-date, safe, effective maps and charts to be used daily by the Armed Forces.

Of the 90 million maps and charts annually distributed the majority are used by the Federal government, civilian and military agencies.[1] Relatively few of the Agency's products are available to the public.

Department of the Army

The Army Corps of Engineers is responsible for the surveys and production of topographic maps required by the Department of the Army. The maps usually only show the topography adjacent to the river. A series of maps is generally necessitated by a large river.

Maps and Charts: Mississippi River System, issued by the North Central Division, Corps of Engineers, is a

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[1] U. S., Department of Defense, Defense Mapping Agency, Putting It All Together by Howard W. Penney (Washington, D. C.: Defense Mapping Agency, n.d.), p. 1.

descriptive price list of maps and charts suited for navigation of the Mississippi River and the principal connecting waterways. The selection of these publications is tailored to the general needs of the navigator and the inland-waterway tourist. Included are maps or charts for: the Mississippi River, Ohio River, Illinois Waterway, Cumberland River, Tennessee River, Missouri River and the Arkansas-Verdigris Rivers. Addresses and prices are given for each publication.

The Nashville District Office Price List advertises recreational folders, general maps and charts, topographic three minute quadrangles and topography two and one-half minute quadrangles. These materials may be ordered from:

District Engineer
Map Section
P. O. Box 1070
Nashville, Tennessee 73202

Illinois Waterway Strip Maps, depicting the principal waterways of the United States and listing general information for navigators, is free from the:

Illinois Waterway
United States Army Engineer
219 South Dearborn Street
Chicago, Illinois 60604

The Illinois Waterway publishes recreational folders as does the Vicksburg District Office. These folders, detailing the subject, are produced on De Gray Lake, Lake Ouachita, and Sardis Dam and Lake Little Tallahatchie River Mississippi.

Reports as Water Resources Development in Mississippi and Flood Control: Lower Mississippi Valley are studies on projects by the Vicksburg District Office which contain maps pertinent to the research. Quadrangle maps, following the Geological Survey standards, are issued. These publications may be obtained from:

Lower Mississippi Valley Division
Corps of Engineers
P. O. Box 80
Vicksburg, Mississippi 39180

The Mississippi River Division publishes a chronology of maps called a Descriptive List of Maps and Charts for Sale to the Public. The maps date from 1890 reproductions to the present day. To request an index or maps, write to:

District Engineer
United States Army Engineer District, Omaha
6014 United States Post Office and Court House
Omaha, Nebraska 68102

District Engineer
United States Army Engineer District, Kansas City
700 Federal Office Building
601 East 12th Street
Kansas City, Missouri 64106

Other offices produce maps; to learn of their publications, it is necessary to inquire from each individual office for price lists.

CHAPTER VIII

OTHER DEPARTMENTS AND AGENCIES PUBLISHING MAPS

Department of Agriculture

The Forest Service has the Federal responsibility for determining national priorities, formulating programs, and establishing the pattern of United States policies that relate to man and his natural environment. The Service covers two basic areas of activity:

> (1) Management, protection and development of the National Forests and National Grasslands;
> (2) Cooperation with State and private owners, wood processors, and public agencies, to improve and extend the Nation's forest resources.[1]

Extending over 155 National Forests, 19 National Grasslands, and 19 Land Utilization Projects, the Service manages over 187 million acres of land, mapping the areas primarily for resource and engineering purposes.[2] An active program in engineering mapping is scheduled for road reconnaissance and design, for dams, watersheds, wildlife areas, and recreation centers. These are often a blueprint

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[1] U. S., Department of Agriculture, Forest Service, What the Forest Service Does (November 1972), p. 1.

[2] Ibid.

form of maps.[1] The watershed areas are mapped on a cooperative basis as are the topographic maps done with the Geological Survey. The topographic maps are completed through regional organization centers scattered throughout the United States.

The Forest Service publishes its standard forest series as well as recreational folders, both available at no cost, containing planimetric maps. Free price lists and indexes of the areas administered by the Forest Service may be procured from:

Forest Service
Department of Agriculture
Washington, D. C. 20250

Another service, the Soil Conservation Service has been publishing county or larger area soil surveys since 1899.[2] The Service works in cooperation with state and Federal agencies to produce the surveys which include soil maps, descriptions of each kind of soil found in the particular area and general information about agriculture and the climate of the specific area. Surveys issued since 1957 are more informative as they contain soil maps printed

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[1]Catherine I. Bahn, "United States Government Mapping Agencies: Recent Activities and Changes," Special Libraries Association. Geography and Map Division Bulletin, no. 76 (June 1969), p. 15.

[2]U. S., Department of Agriculture, Soil Conservation Service, List of Published Soil Surveys (July 1973), p. 1.

on a photomosaic base and offer various kinds of interpretations for different soils.[1] Soil survey maps, issued on a 1:20,000 or 1:15,840 scale are used by ranchers, farmers, educators and scientists.

There are three main ways to obtain soil surveys still in print: 1) from the local county agent, congressman or the Information Division for surveys outside the area, free to land users or professional workers; 2) from the Superintendent of Documents shortly after publication; 3) from libraries.

A free List of Published Soil Surveys is available from:

Information Division
Soil Conservation Service
United States Department of Agriculture
Washington, D. C. 20250

The Foreign Agricultural Organization, a part of the international intergovernmental organization, deals with multi-subject areas in agriculture. The maps contained in reports are not easily accessible in the United States except at the National Agricultural Library.

The ASCS Aerial Photography Status Maps, published by the Agricultural Stabilization and Conservation Board contains a map of each state depicting the status of the completed aerial photography of the state. The photography

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[1] Ibid.

is especially clear with sharp images taken at the height of agricultural and other cultural activities during the summer months, whereas the Geological Survey maps are photographed during the winter months, more usable for contour maps. The 1:20,000 scale makes the maps valuable for geographic work.

Index status maps regarding western states are available from:

Western Aerial Photography Laboratory
ASCS-USDA
2505 Parley's Way
Salt Lake City, Utah 84109

Requests for eastern state indexes should be addressed to:

Eastern Aerial Photography Laboratory
ASCS-USDA
45 South French Broad Avenue
Asheville, North Carolina 28801

These indexes are prints re-photographed at a reduced scale, allowing the user to determine exactly which map is desired.

Federal agencies do not stock aerial photographs; therefore, each order must be custom processed, generally taking a minimum of thirty days to complete the order. These prints vary greatly in price depending upon print size and quantity.

Department of Housing and Urban Development

Within the Department of Housing and Urban Development the most current mapping topic is that of the areas eligible for flood insurance. The Federal Insurance Administration has arranged for printing of maps covering the flood-prone areas. Each of the localities eligible for flood insurance, numbering in the thousands, is listed in Areas Eligible for Flood Insurance available from:

Department of Housing and Urban Development
Washington, D. C. 20549

Unfortunately, the maps are not available for public distribution, but a depository library might acquire these maps.

The Department of Housing and Urban Development also produces some maps as parts of reports connected with programs and grants in urban, metropolitan and regional areas. Cooperation with the Geological Survey, the Defense Mapping Agency and the Census Bureau facilitates the development of urban transportation and land facilities planning. These maps and reports are located in the Department's library.

Department of State

The International Boundary Commission, a division of the Department of State, is responsible for the mapping

of the boundary between Canada and the United States. The Commission issues reports at irregular intervals with numerous maps available to illustrate the individual reports. The maps and reports date from the early 1900's to the present day. This list and the maps which depict the boundaries may be obtained from:

International Boundary Commission
United States and Canada
441 G. Street N. W.
Room 3810
Washington, D. C. 20548

The southern continental United States border is monitored by the International Boundary and Water Commission. Although maps are necessary, those published by the Defense Mapping Agency or United States Geological Survey are used.

The Office of the Geographer publishes materials related to its missions and requirements. The Geographic Bulletin, a series on national sovereignties and related geographic data; Geographic Notes, issued irregularly, notes changes in the status of various countries and name and capital changes; and Geographic Report, a series of studies on sovereignty and related matters all include excellent maps and indicate the most current political information and up-to-date names. It is the responsibility of the Office of the Geographer to compile and maintain

data on national sovereignties including geographical details.

Department of Transportation

The Highway Administration publishes but a few maps; one of which is The National System of Interstate and Defense Highways, available free from the:

Federal Highway Administration
Department of Transportation
Washington, D. C. 20235

The Federal Aviation Authority, the Federal Railroad Administration, and the Coast Guard also produce only a small quantity of maps annually.

One of the main cooperative efforts is with the Department of Housing and Urban Development to prepare urban mass transportation research studies and maps resulting from the investigations. However, these maps are not available for public distribution.

Central Intelligence Agency

The Central Intelligence Agency has released a series of multicolor relief maps of foreign countries. Each map indicates transportation networks, ports, airfields, and major urban areas. Inset maps provide additional information concerning population density, vegetation, land use, economic activity, and ethnic groups. The latest

releases are Uruguay and the Phillipines. These maps may be purchased from the Superintendent of Documents and cost approximately seventy cents each.

Federal Power Commission

One of the major independent regulatory agencies of the Federal government, the Federal Power Commission regulates the interstate aspects of the electric power and natural gas industries. The Commission is also responsible for licenses for construction and operation of hydroelectric projects. The consumer must be protected and a healthy utility industry must be shared while still protecting our natural environment.[1]

Maps by the Federal Power Commission are listed in the Federal Power Commission Publications List, available upon request from:

Federal Power Commission
Washington, D. C. 20554

Principal Electric Facilities, a set of eight regional maps showing high voltage lines and generating systems and Major Natural Gas Pipelines, depicting the existing pipelines, natural gas fields, imports and exports of gas from Mexico and Canada and the companies involved

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[1] U. S., Federal Power Commission, The Federal Power Commission (September 1972), p. 1.

are two typical examples of the maps issued by the Federal Power Commission. Ranging from twenty-five cents to one dollar seventy-five cents, the maps are sold by the Superintendent of Documents.

Tennessee Valley Authority

Topographic maps (1:24,000) of its area following the standards of the Geological Survey, navigation charts of Tennessee Valley Authority reservoirs and of the Tennessee River and its tributaries, recreation maps of Tennessee Valley lakes, and many other special purpose maps and charts are produced by the Maps and Surveys Branch of the Division of Water Control Planning of the Tennessee Valley Authority who does all the surveying, and basic map work required for new Tennessee Valley Authority projects, including topographic, cadastral, hydrographic, general- and special-purpose maps. The actual publication of maps is done by the Geological Survey. Index maps of the major series and a price catalog, plus free pamphlets of particular interest are available upon request from:

Map Information and Record Unit
Tennessee Valley Authority
110 Pound Building
Chattanooga, Tennessee 37401

Topographic and other maps of the Tennessee Valley Authority also may be purchased from the United States Geological

Survey. General information on the many activities of the Tennessee Valley Authority may be requested from:

Tennessee Valley Authority
Information Office
324 New Sprankle Building
Knoxville, Tennessee 37902

Other Map Producing Agencies

The Civil Aeronautics Board publishes yearly air transport maps. The Federal Communications Commission, the Federal Trade Commission and the United States Information Agency are examples of agencies that produce only one or two maps a year directly relating to their missions.

The Atomic Energy Commission is measuring the distribution of radionuclides to determine where fallout products go, how fast and how far. Interior is cooperating as part of its concern for commercial fisheries. The interest of NASA lies in testing the concepts of satellite sensors for weather and oceanographic observations and similar devices as part of the Earth Resources Survey Satellite Program. The Coast Guard of the Department of Transportation will handle oceanographic and meteorological buoys.[1]

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[1] Catherine I. Bahn, "United States Government Mapping Agencies: Recent Activities and Changes," Special Libraries Association, Geography and Map Division Bulletin, no. 76 (June 1969), p. 20.

The National Science Foundation is financing many of the experiments of the individual research scientists and the National Oceanographic Data Center will cooperate with its systems and programming expertise.[1] The Smithsonian Institution Astrophysical Observatory conducts investigations in cooperation with other Federal agencies.

All of the lesser map publishing departments and independent agencies will generally require the production of at least one map annually, but these are most often published by the principal mapping agencies of the Government.

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[1] Ibid.

CHAPTER IX

MAP DEPOSITORY PROGRAM

For academic libraries and public libraries there is still an alternative source to acquire United States government maps. The College Depository Program is a partnership between the educational institutions and the Defense Mapping Agency Topographic Center, originally the Army Map Service. Selected maps and map publications are deposited in colleges and universities, making maps available to the academic community.

The depository program started due to the surplus of military maps following World War II. Prior to the war there was relatively little demand for foreign military maps. The advent of World War II found the United States in urgent need of maps exceeding the Army Map Service's informational resources. Colleges, universities and public libraries responded with books, maps, photographs and reports.[1]

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[1]Frank T. Nicoletti, "U. S. Army Topographic Command: College Depository Program," Special Libraries Association. Geography and Map Division Bulletin, no. 86 (December 1971), p. 2.

To express appreciation, the Army Map Service provided forty-five institutions each with a package of 5,000 different map sheets in 1945.[1] With such a gratifying reaction to the donation of the maps, the Army Map Service established a formal depository program. From the increased production of maps of allied countries and the capture of German and Japanese maps the accumulation of materials was abundant. The superfluous stock formed the initial distribution of the program.

With the onset of the Korean War, the extreme burden placed on the Army Map Service, the program came to a halt. The increase in reproduction and lack of manpower caused the program to lay dormant for five years. A survey was sent to the participating institutions following the Korean War to elicit the state and interest in the collection. The reactivation of the program in 1958 was due to the expressed desire of the institutions to continue receiving maps.[2]

Although academic libraries predominate, public libraries are also eligible to participate. To become a member, the library must apply in writing to the Defense Mapping Agency agreeing to certain stipulations expressed

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[1] Ibid.

[2] Ibid., p. 3.

in Terms of Participation.[1] Since membership is contingent on a vacancy, patience is necessary.

As a member withdraws, the entire collection must be relinquished to the new member library. The transfer of the collection often creates a problem with the size of the collection. To alleviate some of the difficulty the Terms of Participation were amended, permitting members to dispose of any maps in any manner they deemed appropriate, excluding those 6,000 in the Map Depository Catalog.

Annually, personnel select 200-300 different maps and publications for shipment to depositories.[2] Selection is decided from indexes of new maps of the preceding year which had not been distributed and from new series of the current year. Criteria used for inclusion are adequacy of stock and potential value for instructional and research purposes. In general, sufficient copies of each map must be available or the map is not distributed at all. No distribution of maps with a scale larger than 1:250,000 is made, unless it is an old map of the United States. The Government is more concerned in furnishing maps of varied types, scales, areas and other factors than in supplying complete coverage. They feel variety is more instructional than total coverage.

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[1] Ibid.

[2] Ibid.

A Depository Newsletter, issued irregularly during the year, informs member institutions regarding maps and map librarianship. Questions are answered and also single items of interest are distributed by this means.[1]

The primary purpose of the College Depository Program is not completely altruistic. In return for deposits, members are requested to send the government the institution's accession list annually. United States government items are to be excluded from the list.[2] This compilation assists the center in completing their collection.

Secondary purposes include:

> the providing of supplemental storage . . ., the instilling of interest in maps among institutions thus developing potential sources of emergency assistance and making maps available to many individuals who had never had access to such materials before.[3]

Some unanticipated benefits accomplished are:

> --a number of colleges and universities have established or expanded courses in cartography, geodesy, photo interpretation, photogrammetry and other map oriented courses.
> --some have enlarged their existing library and cartographic facilities while others have built new

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[1]Walter W. Ristow, "The Emergence of Maps in Libraries," Special Libraries 58 (July-August 1967): 404.

[2]Mary Murphy, "History of the Army Map Service Map Collection," in Federal Government Map Collecting, ed. Richard W. Stephenson (Washington, D. C.: Special Libraries Association, Washington, D. C. Chapter, 1969), p. 4.

[3]Nicoletti, p. 6.

> facilities in order to improve and expand their geographic, educational or library programs.
> --dispersal of maps negates the need for students and faculty requesting these materials.[1]

All programs have difficulties. Some of these problems existing are:

> --Although the waiting list is based on a "first come, first served" principle in the best tradition of fair play, some schools attempt to better their position by appealing to higher levels of government.
> --Maps available for distribution are few in numbers and decrease each year as does the yearly production rate.[2]

With all these factors in mind it is necessary to note that if the library desiring membership can not make effective use of the maps, they should not apply. Cost in space, personnel, and equipment outweigh any benefits of free maps. They should locate the nearest depository and try to arrange a consortium rather than attempting the deposit alone. This has been an effective method of operation for Catholic University.

The program outlined is also available with the National Ocean Survey, the United States Geological Survey and the Defense Mapping Agency Aerospace Center.[3] To

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[1] Ibid.

[2] Ibid.

[3] Alberta G. Koerner, "Acquisition Philosophy and Cataloging Priorities for University Map Libraries," Special Libraries 63 (November 1972): 513.

obtain more specific details on the available programs, a library should write directly to each of the agencies involved. The status of the programs is a constantly changing factor, therefore it is necessary to obtain the most recent information available when desiring membership.

CHAPTER X

CONCLUSION

The acquisition of Federally published maps and charts has been demonstrated as a tedious, conscious effort to ascertain the extent of publication of these products. To eliminate or reduce the acquisition dilemma, a more inclusive consolidation of agencies should be considered. The civilian agencies are especially in dire need of uniting to form a cohesive body. This proposition has been substantiated by the Report of the Federal Mapping Task Force on Mapping, Charting, Geodesy and Surveying, July 1973, which states three disturbing phenomena:

> One is the significant growth in uncoordinated, noncumulative, single-purpose surveys and mapping which benefit only one user agency and are therefore inefficient. The second is a growing mass of unmet national needs for products and data. The third is the inability of the community as now organized to deal efficiently and responsively with these growing and changing requirements.[1]

The Defense Mapping Agency, a condensation of military agencies, has effectively accomplished this task, eliminating much of the redundancy previously existing.

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[1] U. S., Executive Office of the President, Office of Management and Budget, Report of the Federal Mapping Task Force on Mapping, Charting, Geodesy and Surveying, July 1973, p. 1.

Until a total coordinated program is initiated and executed by the mapping agencies, major acquisition difficulties will prevail. The procurement of maps and charts will therefore require the use of numerous selection tools, none of which is exceptional or adequate in coverage. The Monthly Catalog of United States Government Publications, still a good choice, is incomplete in coverage. Periodicals must be employed, as well as catalogs, lists or indexes from the responsive agencies, departments, bureaus, services and other governmental divisions.

The majority of maps and charts published by the United States government are distributed through three main agencies: the Defense Mapping Agency, the National Ocean Survey and the United States Geological Survey. As has been noted these agencies publish and/or distribute maps for other agencies, yet not all the maps are listed in these three agencies' publications lists.

The agencies with their similar and contrasting programs obviously must produce maps and charts for diverse purposes. As is noted, "In this complex and interesting world almost every field of human enterprise and activity has problems which are best solved by information presented on maps."[1]

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[1]Walter W. Ristow, "What About Maps?" Library Trends 1 (October 1953): 123.

The importance of maps and charts has been underestimated.

> In summary, maps are a means of expressing certain facts which can be observed and measured. Their areal pattern and distribution are indicated by lines and conventionalized symbols with limited flexibility. As a medium of presenting ideas and information, they are less subject to personal judgment, delicate differences, and personal style than books.[1]

With this manual as a guide, the acquisition dilemma should be reduced with respect to the maps and charts published by the United States government. The more serious problem will be the changing of names, creations or terminations of Government agencies, requiring the map user to originate the searching process for maps and charts published by these agencies.

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[1]Edward B. Espenshade, Jr., "Maps for the College Library," College and Research Libraries 8 (April 1947): 137.

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